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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,775	12/12/2003	Hideshi Murai	2380-780	2740
23117	7590	11/23/2005	EXAMINER	
NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			CASCA, FRED A	
			ART UNIT	PAPER NUMBER
			2687	
DATE MAILED: 11/23/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/733,775	MURAI, HIDESHI
	Examiner Fred A. Casca	Art Unit 2687

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-37 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 12 December 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/11/05.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9-15, 24-32, and 33-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 24, and 33 recite the limitation "whether a condition in the system indicates that a downlink cell boundary between the macro cell and micro cell and an uplink cell boundary between the macro cell and the micro cell should be unbalanced". The limitation does not clearly define the cell coverage area for the cell boundary between the macro cell and micro cell. In fact, the limitation could be interpreted either as an uplink communication and a downlink communication between a user equipment in the coverage area of a micro-cell with the base station of a macro-cell, or as uplink communication and downlink communication between a base station of a micro-cell and the base station of a macro-cell. Another way of interpreting the limitation is communication between two user equipments; one in coverage area of a micro-cell and the other in the coverage area of a macro-cell. Both of these user equipment would be engaged in downlink and uplink communication with their perspective base stations, and their base station would allow the communication between these two user equipment via another downlink and uplink connection.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5, 9-12, 14, 16-17, 23-24, 26-28, and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidong et al (Vehicular Technology Conference; May 6-9, 2001; Volume 4; pages 2412-2415), in view of Takeo (Vehicular Technology Conference; IEEE 49th, Volume 3, May 16-20, 1999; pages 1804-1808).

Referring to claim 1, Weidong disclose a method for use in a cellular communications system that includes a macro cell encompassing a smaller micro cell (Fig. 5, abstract, and page 2412, left column), comprising:

establishing an uplink communication cell boundary between the macro cell and the micro cell, and establishing a downlink communication cell boundary between the macro cell and the micro cell from the uplink communication cell boundary (page 2412, left column, “radius of the macrocell”, “radius of microcell”, note that the macro cells contain the micro cells and inherently downlink communication and uplink communication takes place between the micro cells and macro cells).

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Weidong does not specifically disclose establishing a downlink communication cell boundary between the macro cell and the micro cell **different** from the uplink communication cell boundary.

Takeo teaches that the downlink and uplink transmission asymmetry (unbalance), and discloses reducing the capacity in downlink transmission in radio cells (page 1804, abstract, and introduction, “location of cell boundary for downlink varies”, “reduce capacity in the downlink”).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong by incorporating the teachings of Takeo into that of Weildong and allowing the system of Weildong to allow an reduction in downlink capacity to cause a downlink unbalance between the macro cell and the micro cell, and consequently causing establishing a downlink communication cell boundary between the macro cell and the micro cell **different** from the uplink communication cell boundary as suggested by Takeo, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 2, the combination of Weidong/Takeo disclose the method in claim 1.

Weidong does not disclose the uplink communication cell boundary is larger than the downlink communication cell boundary.

Takeo discloses that the capacity in the downlink is larger than the uplink (page 1804, abstract and introduction, the capacity in the downlink is larger than the uplink).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the method of Weidong/Takeo by reversing the order of coverage capacity

on the downlink from uplink, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 3, the combination of Weidong/Takeo disclose the method in claim 2, wherein the downlink communication cell boundary is established by reducing a power at which a broadcast signal is transmitted from a base station associated with the micro cell (Takeo, page 1804, abstract, and introducion).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong by incorporating the teachings of Takeo into that of Weildong, for the purpose of reducing multi-path interference due to high traffic volume

Referring to claim 5, the combination of Weidong/Takeo disclose the method in claim 2, and further disclose downlink communication cell boundary is established by decreasing a detected power level of a signal transmitted by the micro cell (Weidong, page 2413, left column, “pilot signal”).

Referring to claim 9, Weidong discloses a method for use in a cellular communications system that includes a macro cell encompassing a smaller micro cell (Fig. 5, abstract, and page 2412, left column), the macro cell including a macro cell base station and the micro cell including a micro cell base station (page 2412, left column, “radius of the macrocell”, “radius of microcell”), comprising:

determining whether a condition in the system indicates that a cell boundary should be unbalanced; and if the condition is met, reducing the boundary to effect an unbalance between the uplink and downlink boundaries (page 2412, right and left columns, “the reverse coverage of CDMA systems depends on the traffic load of the cell and interference . . . when the traffic load of the cell increase, the reverse coverage shrinks”, note that due to traffic and interference the reverse link coverage is varying and inherently).

Weidong does not specifically disclose that a **downlink** cell boundary **between the macro cell and the micro cell and an uplink cell boundary between the macro cell and the micro cell** should be unbalanced; and if the condition is met, reducing the **downlink micro cell** boundary to effect an unbalance between the uplink and downlink **microcell** boundaries.

Takeo teaches that the downlink and uplink transmission asymmetry (unbalance), and discloses reducing the capacity in downlink transmission in radio cells (page 1804, abstract, and introduction, “location of cell boundary for downlink varies”, “reduce capacity in the downlink”).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong by incorporating the teachings of Takeo into that of Weidong and allowing the system of Weildong to allow an reduction in downlink capacity to cause a downlink unbalance between the macro cell and the micro cell, as suggested by Takeo, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 10, the combination of Weidong/Takeo discloses the method in claim 9, and further disclose the condition is based on a probability that a mobile station in the system

will not receive a predetermined service quality when the uplink and downlink micro cell boundaries are balanced (Takeo, page 1804, introduction).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the method of Weildong by incorporating the teachings of Takeo into that of Weidong, for the purpose of providing a better quality service.

Referring to claim 11, the combination of Weidong/Takeo disclose the method in claim 9, and further disclose the condition is based on one or more of the following: system load, traffic, radio link propagation condition between the macro cell base station and the mobile station, height of an antenna in the macro cell base station, cell size, geographical relationship between the macro cell base station and the micro cell base station, and mobile station speed (Weidong, page 2413, left column).

Referring to claim 12, the combination of Weidong/Takeo disclose the method in claim 9, and further disclose the downlink cell boundary is reduced by reducing a power at which a pilot signal is transmitted from a base station associated with the micro cell (Weidong, page 2413, left column).

Referring to claim 14, the combination of Weidong/Takeo disclose the method in claim 9, and further disclose the downlink cell boundary is reduced by decreasing a detected power level of a pilot transmitted by the micro cell base station (Takeo, page 1806, left column).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong by incorporating the teachings of Takeo into that of Weildong, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 16, Weindog discloses an apparatus for use in a cellular communications system that includes a macro cell encompassing a smaller micro cell (Fig. 5, abstract, and page 2412, left column), comprising:

means for establishing an uplink communication cell boundary between the macro cell and the micro cell, and means for establishing a downlink communication cell boundary between the macro cell and the micro cell (Fig. 5, and page 2412, left column, “radius of the macrocell”, “radius of microcell”, note that microcells are contained within the macrocells, and inherently downlink and uplink communication takes place between the microcells and macrocells).

Weidong does not specifically disclose means for establishing a downlink communication **cell boundary between the macro cell and the micro cell different from the uplink communication cell boundary.**

Takeo teaches downlink cell boundary different from uplink cell boundary (page 1804, abstract, and introduction, “location of cell boundary for downlink varies”, “reduce capacity in the downlink”).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong by incorporating the teachings of Takeo into that of Weildong and allowing the system of Weildong to allow establishing a downlink communication cell boundary between the macro cell and the micro cell different from the uplink

communication cell boundary, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 17, the combination of Weidong/Takeo disclose the apparatus in claim 16, and further disclose the uplink communication cell boundary is larger than the downlink communication cell boundary (Takeo, page 1804).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the apparatus of Weildong by incorporating the teachings of Takeo into that of Weildong, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 23, the combination of Weidong/Takeo disclose the apparatus in claim 17, and further disclose means for determining that a mobile station is moving a velocity greater than a predetermined velocity, and means for effectively decreasing the downlink communication cell boundary (Takeo, page 1804, abstract, and introduction).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong by incorporating the teachings of Takeo into that of Weildong, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 24, Weidong disclose a node for use in a cellular communications system that includes a macro cell encompassing a smaller micro cell, the macro cell including a macro cell base station and the micro cell including a micro cell base station (Fig. 5, abstract, and page 2412, left column), comprising:

a supervisory controller configured to control one or more operations of the macro cell base station and the micro cell base station (fig. 5, and page 2412, introduction, note that micro cells and macro cells inherently have base stations and base station controllers), and a link balance controller, coupled to the supervisory controller, configured to determine whether a condition indicates that an unbalanced link should be implemented between (page 2412, right and left columns, “the reverse coverage of CDMA systems depends on the traffic load of the cell and interference . . . when the traffic load of the cell increase, the reverse coverage shrinks”).

Weidong does not specifically disclose determine whether a condition indicates that an unbalanced link should be implemented between **a downlink cell boundary between the macro cell and the micro cell and an uplink cell boundary between the macro cell and the micro cell, and if so, to reduce the downlink micro cell boundary to implement the unbalanced link.**

Takeo teaches that the downlink and uplink transmission asymmetry (unbalance), and discloses reducing the capacity in downlink transmission in radio cells (page 1804, abstract, and introduction, “location of cell boundary for downlink varies”, “reduce capacity in the downlink”).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weidong by incorporating the teachings of Takeo into that of Weildong and allowing the system of Weildong to allow an reduction in downlink capacity to cause a downlink unbalance between the macro cell and the micro cell, as suggested by Takeo, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 26, the combination of Weidong/Takeo disclose the node in claim 24, and further disclose the condition is based on a probability that a mobile station in the system will not receive a predetermined service quality when the uplink and downlink micro cell boundaries are balanced (Weidong, page 2414, performance analysis).

Referring to claim 27, the combination of Weidong/Takeo disclose the node in claim 24, and further disclose the condition is based on one or more of the following; system load, traffic, radio link propagation condition between the macro cell base station and the mobile station, height of an antenna in the macro cell base station, cell size, geographical relationship between the macro cell base station and the micro cell base station, and a mobile station's speed (Weidong, page 2412, introduction).

Referring to claim 28, the combination of Weidong/Takeo disclose the node in claim 24, and further disclose link balance controller is configured to transmit a command to the micro cell base station to reduce a power at which a pilot signal is transmitted from the micro cell base station (Weidong, page 2412, introduction, and page 2413, left column).

Referring to claim 33, Weidong disclose a hierarchical cell structure (HCS) system (Fig. 5, abstract, and page 2412, left column), comprising:  
a macro cell encompassing a smaller micro cell, the macro cell including a macro cell base station and the micro cell including a micro cell base station, and a radio network controller, coupled to the macro cell base station and the micro cell base station (page 2412, left column,

“radius of the macrocell”, “radius of microcell”, note that radio network controllers are inherently coupled to the base stations of the micro and macro cells), configured to determine whether an unbalanced link should be implemented, and if so, to implement the unbalanced link (page 2412, right and left columns, “the reverse coverage of CDMA systems depends on the traffic load of the cell and interference . . . when the traffic load of the cell increase, the reverse coverage shrinks”, note that due to traffic and interference the reverse link coverage is varied).

Weidong does not specifically disclose determining whether an unbalanced link should be implemented **between a downlink cell boundary between the macro cell and the micro cell and an uplink cell boundary between the macro cell and the micro cell, and if so, to reduce the downlink micro cell boundary to implement the unbalanced link.**

Takeo teaches that the downlink and uplink transmission asymmetry (unbalance), and discloses reducing the capacity in downlink transmission in radio cells (page 1804, abstract, and introduction, “location of cell boundary for downlink varies”, “reduce capacity in the downlink”).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the HCS of Weildong by incorporating the teachings of Takeo into that of Weildong and allowing the system of Weildong to allow an reduction in downlink capacity to cause a downlink unbalance between the macro cell and the micro cell, as suggested by Takeo, for the purpose of reducing multi-path interference due to high traffic volume.

Referring to claim 34, the combination Weidong/Takeo disclose the HCS system in claim 33, and further disclose radio network controller is configured to transmit a command to the micro cell base station to reduce a power at which a pilot signal is transmitted from the micro cell base station (Weidong, page 2412-2413, introduction and coverage analysis).

5. Claims 6-7, 15, 21-22, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidong et al (Vehicular Technology Conference; May 6-9, 2001; Volume 4; pages 2412-2415), in view of Takeo (Vehicular Technology Conference; IEEE 49th, Volume 3, May 16-20, 1999; pages 1804-1808), and further in view of Ranta et al (US 6233299 B1).

Referring to claim 6, the combination of Weidong/Takeo disclose the method in claim 2.

The combination of Weidong/Takeo does not disclose determining whether an uplink interference level at the micro cell base station exceeds a threshold, and if so, performing an interference cancellation operation to compensate for the uplink interference level.

Ranta discloses interference cancellation which cancel effects of co-channel interference (abstract, and col. 2, lines 5-55).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong/Takeo by incorporating the teachings of Ranta into that of Weildong/Takeo, for the purpose of reducing interference and providing better quality service.

Referring to claim 7, the combination Weidong/Takeo/Ranta disclose the method in claim 6, further comprising detecting one or more parameters regarding one or more mobiles on

the macro cell side of the downlink communication cell boundary (Takeo, page 1804, abstract, and introduction).

The combination Weidong/Takeo does not specifically disclose determining whether to compensate for one or both of intra-cell uplink interference in the micro cell and inter-cell uplink interference in the micro cell, and providing those one or more parameters for use in uplink interference cancellation in the micro cell.

Ranta discloses interference cancellation which cancel effects of co-channel interference (abstract, and col. 2, lines 5-55).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong/Takeo by incorporating the teachings of Ranta into that of Weildong/Takeo, for the purpose of reducing interference and providing better quality service.

Referring to claim 15, the combination of Weidong/Takeo disclose the method in claim 9.

The combination of Weidong/Takeo does not disclose determining if interference associated with an uplink transmission from a mobile station to the macro cell base station is likely to exceed a predetermined limit, and if so, performing interference cancellation the micro cell base station.

Ranta discloses interference cancellation which cancel effects of co-channel interference (abstract, and col. 2, lines 5-55).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong/Takeo by incorporating the teachings of Ranta into that of Weildong, for the purpose of reducing interference and providing better quality service.

Referring to claim 21, the combination of Weidong/Takeo disclose the apparatus in claim 17.

The combination of Weidong/Takeo does not disclose means for determining whether an uplink interference level at the micro cell base station exceeds a threshold, and if so, performing an interference cancellation operation at a receiver at the micro cell to compensate for the uplink interference level.

Ranta discloses interference cancellation which cancel effects of co-channel interference (abstract, and col. 2, lines 5-55).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong/Takeo by incorporating the teachings of Ranta into that of Weildong, for the purpose of reducing interference and providing better quality service.

Referring to claim 22, the combination of Weidong/Takeo/Ranta disclose the apparatus in claim 21, and further disclose means for determining whether to compensate for intra-cell uplink interference in the micro cell, inter-cell uplink interference in the micro cell, or both (Weidong, page 2412, introduction), means for detecting one or more parameters regarding one or more mobiles on the macro cell side of the downlink communication cell boundary (Weidong, page 2412, introduction).

The combination of Weidong/Takeo does not disclose means for providing the one or more parameters for use in uplink interference cancellation in the micro cell.

Ranta discloses interference cancellation which cancel effects of co-channel interference (abstract, and col. 2, lines 5-55).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong/Takeo by incorporating the teachings of Ranta into that of Weildong, for the purpose of reducing interference and providing better quality service.

Referring to claim 32, the combination of Weidong/Takeo disclose the node in claim 24.

The combination of Weidong/Takeo does not disclose link balance controller is configured to determine if interference associated with an uplink transmission from a mobile station to the macro cell base station is likely to exceed a predetermined limit, and if so, to transmit a command to the micro cell base station to perform interference cancellation.

Ranta discloses interference cancellation which cancel effects of co-channel interference (abstract, and col. 2, lines 5-55).

It would have been obvious to one of the ordinary skills in the art at the invention was made to modify the method of Weildong/Takeo by incorporating the teachings of Ranta into that of Weildong, for the purpose of reducing interference and providing better quality service.

6. Claims 4, 8, 13, 18-20, 25, 29, 30-31, and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidong et al (Vehicular Technology Conference; May 6-9, 2001;

Volume 4; pages 2412-2415), in view of Takeo (Vehicular Technology Conference; IEEE 49th, Volume 3, May 16-20, 1999; pages 1804-1808), and further in view of well known prior art (MPEP 2144.03).

Referring to claim 4, the combination of Weidong/Takeo disclose the method in claim 2.

The combination of Weidong/Takeo does not disclose the downlink communication cell boundary is established by tilting a downlink antenna beam of a base station associated with the micro cell that transmits a broadcast signal from the micro cell to reduce the coverage of the broadcast signal.

The examiner takes official notice of the fact that it is well known in the art to configure base station to tilt a downlink antenna beam.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the method of Weidong/Takeo with base station **to tilt a** downlink antenna beam of the micro cell base station that transmits a pilot signal from the micro cell, to provide better signal quality communication.

Referring to claim 8, the combination of Weidong/Takeo disclose the method in claim 2.

The combination of Weidong/Takeo does not disclose determining that a mobile station is moving a velocity greater than a predetermined velocity, and effectively decreasing the downlink communication micro cell boundary.

The examiner takes official notice of the fact that it is well known in the art to determine the mobile station's velocity and determine if a velocity is greater than a predetermined velocity.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the method of Weidong/Takeo by providing determining that a mobile station is moving a velocity greater than a predetermined velocity, and effectively decreasing the downlink communication micro cell boundary, to provide better informed communication system.

Referring to claim 13, the combination of Weidong/Takeo disclose the method in claim 9.

The combination of Weidong/Takeo does not specifically disclose the downlink cell boundary is reduced by tilting a downlink antenna beam of the micro cell base station that transmits a micro cell pilot signal.

The examiner takes official notice of the fact that it is well known in the art to configure base station to tilt a downlink antenna beam.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the method of Weidong/Takeo with base station to tilt a downlink antenna beam of the micro cell base station that transmits a pilot signal from the micro cell, to provide better signal quality communication.

Referring to claim 18, the combination of Weidong/Takeo disclose the apparatus in claim 17.

The combination of Weidong/Takeo does not specifically disclose means for reducing a power at which a broadcast signal is transmitted from a base station associated with the micro cell to reduce the downlink communication cell

boundary.

The examiner takes official notice of the fact that reducing a broadcast signal is well known in the art.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the teachings of prior art into that of the method of Weidong/Takeo, for the purpose of providing low coverage cell.

Referring to claim 19, the combination of Weidong/Takeo disclose the apparatus in claim 17.

The combination of Weidong/Takeo does not disclose means for tilting a downlink antenna beam of a base station associated with the micro cell that transmits a pilot signal from the micro cell to reduce the coverage of the pilot signal.

The examiner takes official notice of the fact that it is well known in the art to configure base station to tilt a downlink antenna beam.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the method of Weidong/Takeo with base station **to tilt a** downlink antenna beam of the micro cell base station that transmits a pilot signal from the micro cell, to provide better signal quality communication.

Referring to claim 20, the combination of Weidong/Takeo disclose the apparatus in claim 17.

The combination of Weidong/Takeo does not disclose means for decreasing a detected power level of a signal transmitted by the micro cell.

The examiner takes official notice of the fact that decreasing a detected signal is well known.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the teachings of prior art into that of the method of Weidong/Takeo, for the purpose of allowing the system to change the threshold of a pilot signal.

Referring to claim 25, the combination of Weidong/Takeo discloses the node in claim 24.

The combination of Weidong/Takeo does not specifically disclose the node is a radio network controller.

The examiner takes official notice of the fact that network controllers are well known in the art.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the teachings of prior art into that of the method of Weidong/Takeo, for the purpose of allowing the system to have an efficient system by controlling cell boundary from the RNC.

Referring to claim 29, the combination of Weidong/Takeo disclose the node in claim 24.

The combination of Weidong/Takeo does not disclose link balance controller is configured to transmit a command to the micro cell base station to tilt a downlink antenna beam of the micro cell base station that transmits a pilot signal from the micro cell.

The examiner takes official notice of the fact that it is well known in the art to configure base station to tilt a downlink antenna beam.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the HCS system of Weidong/Takeo with base station **to tilt a downlink antenna beam** of the micro cell base station that transmits a pilot signal from the micro cell, to provide better signal quality communication.

Referring to claim 30, the combination of Weidong/Takeo disclose the node in claim 24.

The combination of Weidong/Takeo does not disclose the link balance controller is configured to employ an offset to reduce a detected power level of a pilot transmitted by the micro cell base station.

The examiner takes official notice of the fact that it is well known in the art to configure base station to employ an offset.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the teachings of prior art into that of Weidong/Takeo, by providing an offset to reduce a detected power level of a pilot transmitted by the micro cell base station, consequently to provide better signal quality communication.

Referring to claim 31, the combination of Wiedong/Takeo disclose the node in claim 30.

The combination of Wiedong/Takeo does not disclose link balance controller is configured to transmit a command to one or more mobile stations in the system to reduce a

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detected power level of a pilot transmitted by the micro cell base station by an offset amount included in the command.

The examiner takes official notice of the fact that it is well known in the art to configure base station to employ an offset and reduce a detected power signal (pilot signal).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the teachings of prior art into that of Weidong/Takeo, by providing an offset to reduce a detected power level of a pilot transmitted by the micro cell base station, consequently to provide better signal quality communication

Referring to claim 35, the combination of Weidong/Takeo disclose the the HCS system in claim 33.

The combination of Weidong/Takeo does not disclose radio network controller is configured to transmit a command to the micro cell base station **to tilt a downlink antenna beam** of the micro cell base station that transmits a pilot signal from the micro cell.

The examiner takes official notice of the fact that it is well known in the art to configure base station to tilt a downlink antenna beam.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the HCS system of Weidong/Takeo with base station **to tilt a downlink antenna beam** of the micro cell base station that transmits a pilot signal from the micro cell, to provide better signal quality communication.

Referring to claim 36, the combination of Weidong/Takeo disclose the HCS system in claim 33.

The combination of Weidong/Takeo does not disclose radio network controller is configured to employ an offset to reduce a detected power level of a pilot transmitted by the micro cell base station.

The examiner takes official notice of the fact that it is well known in the art to configure a node to employ an offset to reduce a detected power level.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the HCS system of Weidong/Takeo with controller employing an offset to reduce a detected power, for providing better signal quality communication.

Referring to claim 37, the combination of Weidon/Takeo disclose the HCS system in claim 36.

The combination of Weidong/Takeo does not disclose the radio network controller sends a command with the offset to one or more mobile stations in the system to reduce mobile-detected pilot power levels.

The examiner takes official notice of the fact that it is well known in the art to configure a node to employ an offset to reduce a detected power level.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to incorporate the HCS system of Weidong/Takeo with controller employing an offset to reduce a detected power, for providing better signal quality communication.

***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hirayama et al, U.S. Pub. No. 2004/0082335 A1 discloses frequency allocation system in HCS system.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred A. Casca whose telephone number is (571) 272-7918. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid, can be reached at (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
10/31/05  
LESTER G. KINCAID  
SUPERVISORY PRIMARY EXAMINER